CHANGING
GEA HEAT EXCHANGERS



Küba DE *professional*

Powerful ceiling mounted air cooler for commercial applications

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Optimal utilisation of space

Standard version has drip tray hinging down

Large cooling power range

Type designation code

1	2	3	4	5	6
DE	A	E	07	1	D

1 Model range designation
2 Fin spacing
3 Electric defrost
4 Size
5 Number of fans
6 Generation Code

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Capacity range (for SC2)

1.5 kW — 9.4 kW

Temperature range (t_{L1})

-30°C 0°C +20°C

Number of fans

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Applications

- Commercial applications
- Small rooms and low ceilings
- Open sales areas
- Low noise a requirement

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Application benefits for contractors and operators

For even the most demanding applications the Küba DE *professional* is up to the job. Whether aggressive ambient air, critical storage conditions or constant exchange of air: For fine-tuned cooling reliability, the high-performance evaporator offers variable corrosion protection, options for defrosting solutions and fan types to suit the requirements.

The Küba DE *professional* is optimal for:

- Cold rooms which are accessed frequently and therefore regularly exchange air with the outside
- Air containing aggressive particles which may be a by-product of industrial cooling processes (salts, organic acids in pickling rooms, organic acids or amines in meat and sausages)

The Küba DE *professional* offers obvious space saving as well as the powerful ceiling mounted evaporator with draught-free air flow.

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from the Küba Blue Line production range

The size of the store and type of stored goods are decisive in the selection of air coolers.

For high turnover of goods and long storage times, the Küba DE *professional* is the benchmark in terms of efficiency and reliability. If the storage rooms are frequently accessed to remove or store goods, the cooling power of the evaporator must be dimensioned to ensure that the indoor temperature distribution remains constant.

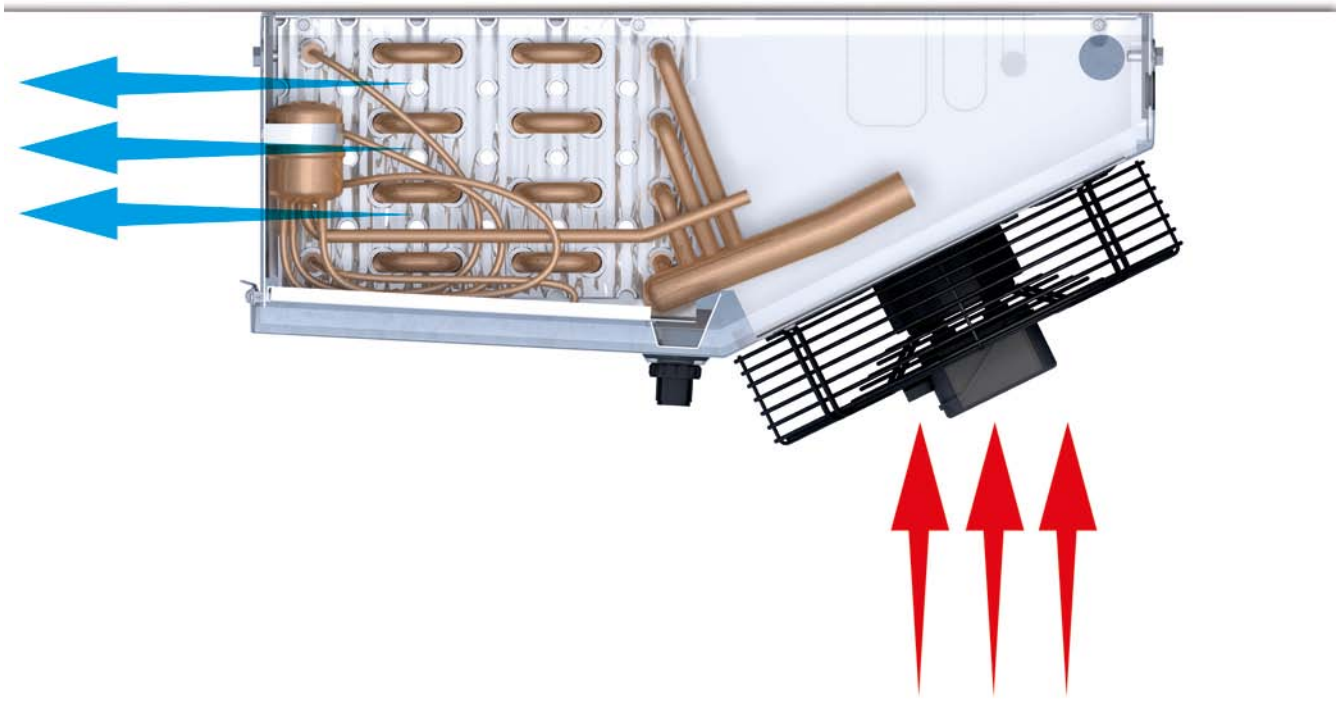
Conditions changing frequently from dry, to moist, to cold and to warm will create high corrosive stress. The lower temperature on the air cooler surfaces will result in condensate formation on these surfaces which will in turn attract aggressive salts or cleaning agent particles in the cold room air.

The Küba DE *professional* is the ideal air cooler for this application. The decisive factor is the aligned tubing which will produce more cooling power per surface area than standard air coolers.

The compact high-performance ceiling mounted evaporator ensures that the air is uniformly distributed, thereby ensuring that the room temperature is maintained throughout the cold room, even in the corners.
Depending on configuration, applications may range from normal cooling to deep freezing down to -30°C.

It is important that regulatory hygiene guidelines are complied with. The Küba DE *professional* has a hinged drip tray and removable side panels for simple, fast and cost-effective cleaning.

We can of course also offer the Küba DE *professional* with EC and AC fans. Please contact your Küba sales consultant for an optimised design and savings through improved energy efficiency.



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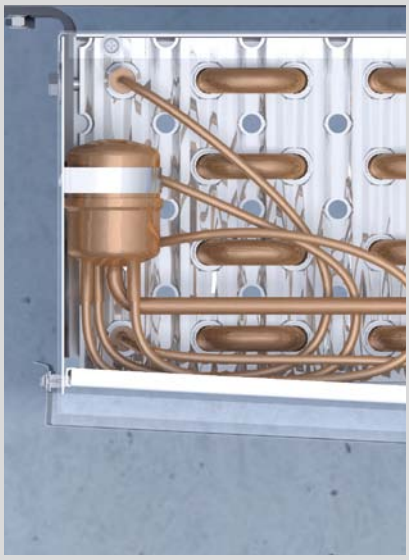
Basic version



Casing

- Smooth aluminum; zinc coated steel
- High grade powder-coating, food-safe, papyrus white, RAL 9018
- End plates, stucco aluminium, not coated
- Food-safe
- Easy to clean
- Best quality powder coated edges
- Compact design
- Hinged drip tray and removable side panels
- Double drip tray
- Stainless steel mounting material
- Plastic drain



Heat exchanger for direct expansion

- Heat exchanger with aligned tube pattern; internally grooved special copper tubes (drawn oxygen-free), according to DIN EN 12735-1,2; diameter: 15 mm; with closed pure-aluminum HFE® fins
- Fin spacing: A = 4.5 mm | B = 7 mm
- Fins flared to form-fit the core tube
- Highly effective heat transfer and compact design
- **Series DE-F: HFC/CO_2** Küba-CAL® refrigerant distributors for multiple injections *Tubing:* special copper piping with inner fins; *Fins:* Al; *End plates:* Al
- **Series DE-G: Glycol** *Tubing:* Cu smooth; *Fins:* Al; *End plates:* Al
- **Series DE-N: with pump /NH_3** Distribution tubes for multi injections *Tubing:* VA; *Fins:* Al; *End plates:* Al



Electric defrost

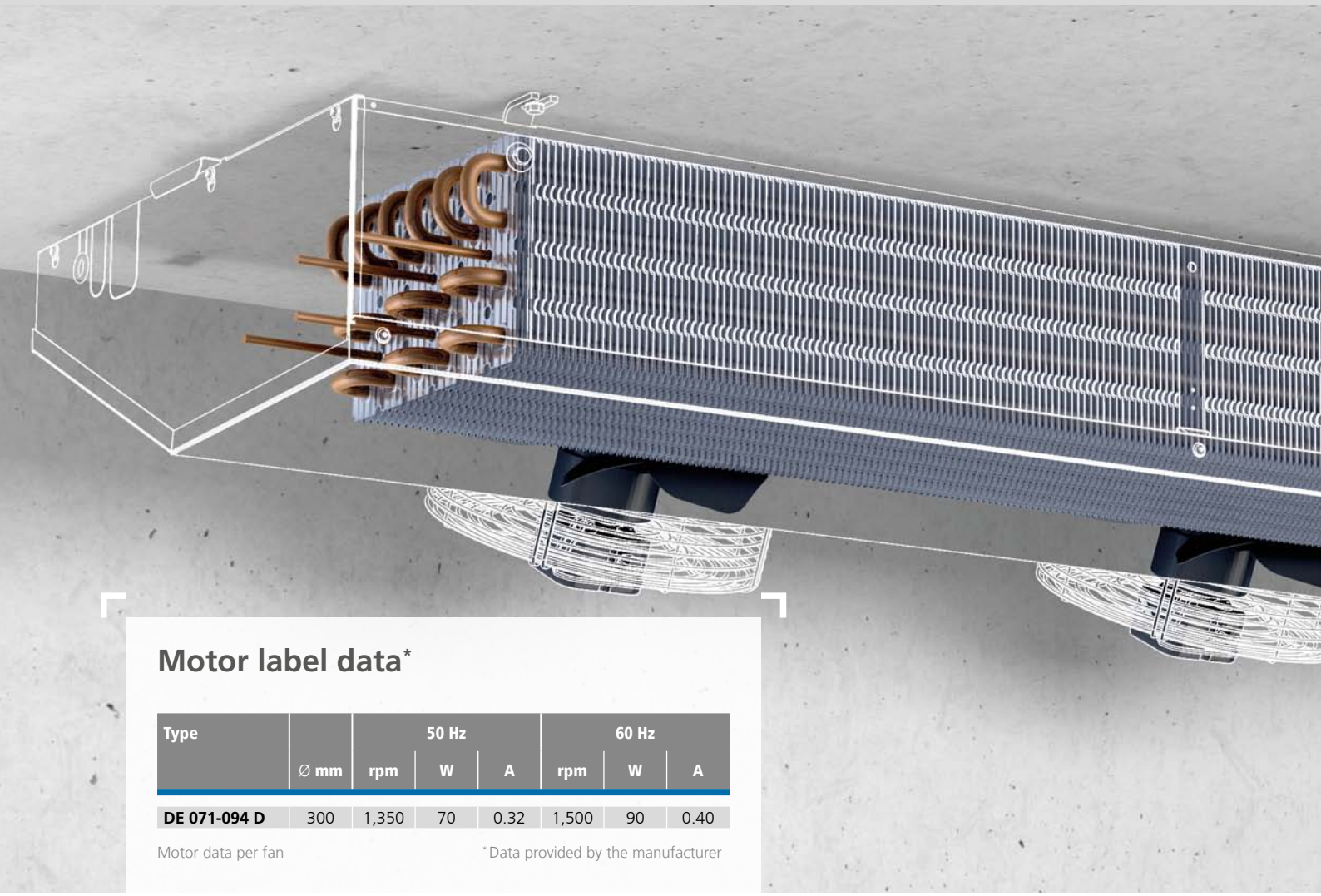
- Heaters with CrNi steel sleeve
- Vapour-tight connections
- Mains voltage: 230 V-1/400V-3-Y
- Wired ready to connect in junction boxes
- Optimized tubular heater configurations ensure fast and even defrosting
- Fins flared to form-fit the core tube
- Aluminium heat pipes that ensure excellent heat transfer to the fins and thus effective defrosting cycles with optimized service life.
- Integrated tube bushings allow a subsequent modification to an electric defrost system.



Fans

- Available fan diameter: 300 mm
- Permissible motor ambient temperatures: -30° C bis +60° C
- 230 ±10% V-1~, 50 Hz/60 Hz
- With built-in protector, according to VDE provisions
- Fans are wired to an internal distribution box
- Protection class: IP44
- Insulation class: B
- Operating data can be found with Küba Select or in the technical data
- Controller:
  - Phase control ☐
  - Transformer ☑
  - Delta/star ☐
  - Frequency converter ☑

Please observe the manufacturer's information!



Motor label data*

Type	Ø mm	50 Hz			60 Hz		
		rpm	W	A	rpm	W	A
DE 071-094 D	300	1,350	70	0.32	1,500	90	0.40

Motor data per fan

*Data provided by the manufacturer

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Technical data – DEA (E)

4,5 mm

Type	Rating Q_0 at 50 Hz. DT1. R404A		Cooling surface	Air flow	Air throw ***	Tube volume	Connections		Sound	Fans (Operational values at 50 Hz)				
	SC2	SC3					Inlet	Outlet	L_{WA}	Blade	Current	Per Fan		
	kW	kW	m^2	m^3/h	m	dm^3	Ø mm	Ø mm	db (A)	Ø mm	230 ± 10% V-1 50 Hz	rpm	W	A
DEA 071 D	1.9	1.5	12.9	1,100	9	2.8	12 x 1.0*	15 x 1.0	68	300	230 V-1	1,350	72	0.3
DEA 081 D	2.1	1.7	16.1	1,070	9	3.5	12 x 1.0*	15 x 1.0	68	300	230 V-1	1,350	72	0.3
DEA 091 D	2.3	1.9	19.3	1,035	9	4.2	12 x 1.0*	15 x 1.0	68	300	230 V-1	1,350	72	0.3
DEA 072 D	3.8	3.0	25.8	2,200	11	5.6	12 x 1.0*	15 x 1.0	71	300	230 V-1	1,350	72	0.3
DEA 082 D	4.2	3.3	32.2	2,140	11	7.0	12 x 1.0*	22 x 1.0	71	300	230 V-1	1,350	72	0.3
DEA 092 D	4.7	3.7	38.6	2,070	11	8.4	10 x 1.0*	22 x 1.0	71	300	230 V-1	1,350	72	0.3
DEA 083 D	6.3	5.0	48.3	3,210	12	10.5	10 x 1.0**	22 x 1.0	73	300	230 V-1	1,350	72	0.3
DEA 093 D	7.0	5.6	57.9	3,105	12	12.6	10 x 1.0**	22 x 1.0	73	300	230 V-1	1,350	72	0.3
DEA 084 D	8.4	6.7	64.4	4,280	16	14.0	10 x 1.0**	22 x 1.0	74	300	230 V-1	1,350	72	0.3
DEA 094 D	9.4	7.5	77.2	4,140	16	16.8	10 x 1.0**	28 x 1.5	74	300	230 V-1	1,350	72	0.3

Subject to modification.

Standard condition	t_{L1}	t_0	DT1
NB2/SC2	0	-8	8
NB3/SC3	-18	-25	7

Correction factors for other refrigerants

Refrigerant	NB2/SC2	NB3/SC3
R134a	1.00	0.91
R507	0.97	0.97
R22	0.95	0.95

* Single injection

** Multiple injection through Küba CAL® distributor

*** Throw limit at 0.5 m/s

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Technical data – DEB (E)

7 mm

Type	Rating Q_0 at 50 Hz. DT1. R404A		Cooling surface	Air flow	Air throw ***	Tube volume	Connections		Sound	Fans (Operational values at 50 Hz)				
	SC2	SC3					Inlet	Outlet	L_{WA}	Blade	Current	Per Fan		
	kW	kW	m^2	m^3/h	m	dm^3	Ø mm	Ø mm	db (A)	Ø mm	230 ± 10% V-1 50 Hz	rpm	W	A
DEB 071 D	1.5	1.2	5.4	1,280	10	2.8	12 x 1.0*	15 x 1.0	68	300	230 V-1	1,350	72	0.3
DEB 081 D	1.8	1.4	10.6	1,220	10	3.5	12 x 1.0*	15 x 1.0	68	300	230 V-1	1,350	72	0.3
DEB 091 D	2.0	1.6	12.7	1,120	10	4.2	12 x 1.0*	15 x 1.0	68	300	230 V-1	1,350	72	0.3
DEB 072 D	3.1	2.4	16.8	2,560	12	5.6	12 x 1.0*	15 x 1.0	71	300	230 V-1	1,350	72	0.3
DEB 082 D	3.6	2.9	21.2	2,440	12	7.0	12 x 1.0*	22 x 1.0	71	300	230 V-1	1,350	72	0.3
DEB 092 D	4.0	3.2	25.4	2,240	12	8.4	10 x 1.0*	22 x 1.0	71	300	230 V-1	1,350	72	0.3
DEB 083 D	5.4	4.3	31.8	3,660	14	10.5	10 x 1.0**	22 x 1.0	73	300	230 V-1	1,350	72	0.3
DEB 093 D	6.0	4.8	38.1	3,360	14	12.6	10 x 1.0**	22 x 1.0	73	300	230 V-1	1,350	72	0.3
DEB 084 D	7.2	5.7	42.4	4,880	17	14.0	10 x 1.0**	22 x 1.0	74	300	230 V-1	1,350	72	0.3
DEB 094 D	8.0	6.4	50.8	4,480	17	16.8	10 x 1.0**	28 x 1.5	74	300	230 V-1	1,350	72	0.3

Subject to modification.

Standard condition	t_{L1}	t_0	DT1
NB2/SC2	0	-8	8
NB3/SC3	-18	-25	7

Correction factors for other refrigerants

Refrigerant	NB2/SC2	NB3/SC3
R134a	1.00	0.91
R507	0.97	0.97
R22	0.95	0.95

* Single injection

** Multiple injection through Küba CAL® distributor

*** Throw limit at 0.5 m/s

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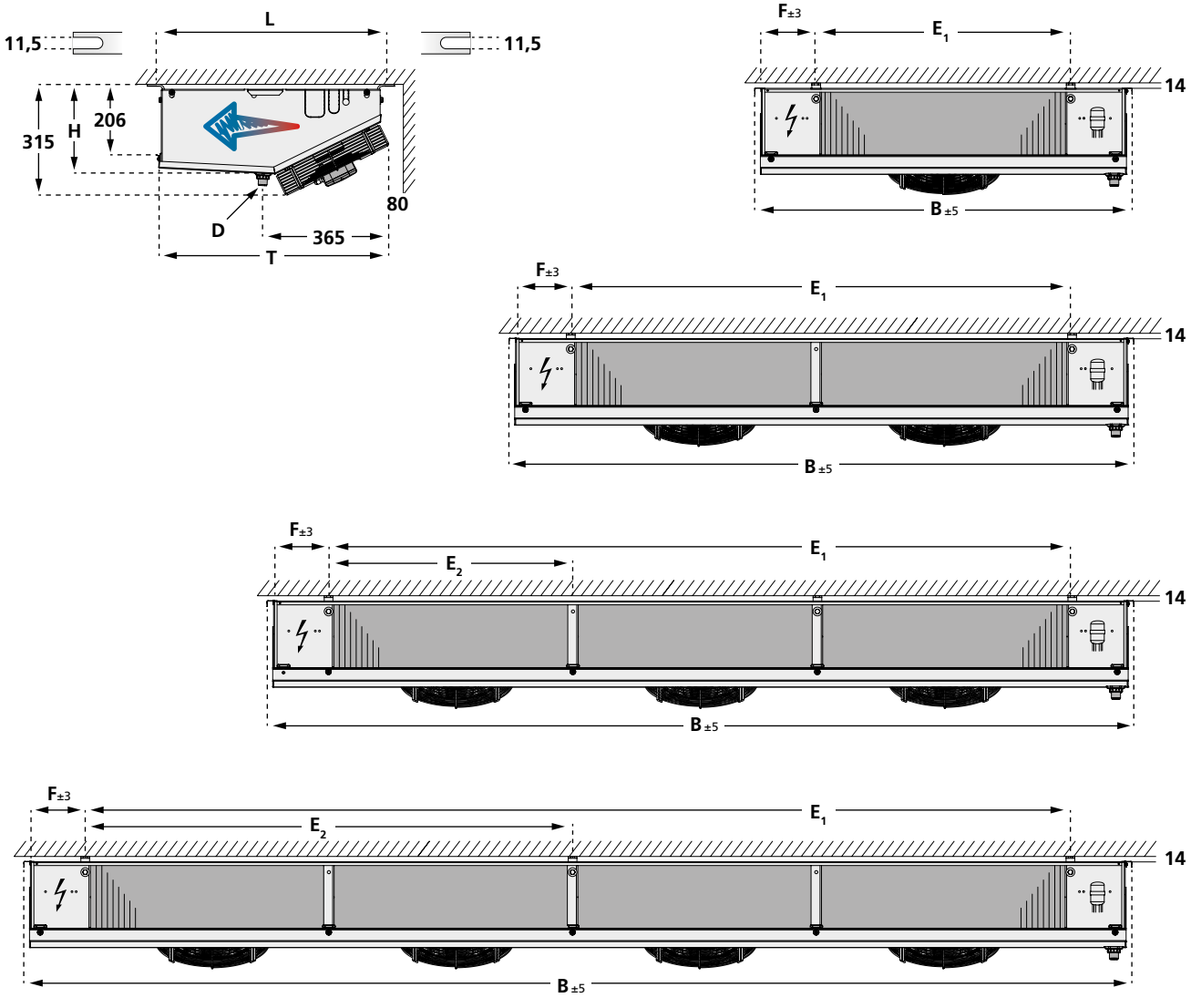
Dimensions, weights, electric defrost, drain

Type	Dimensions							Electrical defrost 230 V-1 / 400 V-3-Y			Weights (net)				Weights (gross)				Drain
	H	B	T	L	E_1	E_2	F	Coil	Tray	Total	DEA	DEA E	DEB	DEB E	DEA	DEA E	DEB	DEB E	D
	mm	mm	mm	mm	mm	mm	mm	kW	kW	kW	kg	kg	kg	kg	kg	kg	kg	kg	inch
DE 071 D	260	1,080	669	672	730	-	175	0.7	0.8	1.5	26	28	24	26	29	32	27	30	G ¾
DE 081 D	260	1,080	669	672	730	-	175	1.4	0.8	2.1	27	30	28	27	30	33	28	31	G ¾
DE 091 D	260	1,080	669	672	730	-	175	1.4	0.8	2.1	31	34	26	31	34	37	31	34	G ¾
DE 072 D	260	1,780	669	672	1,430	-	175	1.2	1.3	2.5	45	48	41	44	50	53	46	49	G ¾
DE 082 D	260	1,780	669	672	1,430	-	175	2.4	1.3	3.7	47	51	42	46	52	56	47	51	G ¾
DE 092 D	260	1,780	669	672	1,430	-	175	2.4	1.3	3.7	54	58	54	58	59	63	58	62	G ¾
DE 083 D	260	2,480	669	672	2,130	1,400	175	3.4	1.8	5.2	67	72	62	66	75	80	68	73	G ¾
DE 093 D	260	2,480	669	672	2,130	1,400	175	3.4	1.8	5.2	73	78	70	76	80	85	77	82	G ¾
DE 084 D	260	3,180	669	672	2,830	1,400	175	4.6	0.6	5.2	79	87	72	82	102	118	106	114	G ¾
DE 094 D	260	3,180	669	672	2,830	1,400	175	4.6	0.6	5.2	87	93	77	82	114	126	110	122	G ¾

The dimensions are only valid for the standard model design! Note the differences in dimension among versions and accessories.

Subject to modification.

Dimensional drawings Küba DE *professional* (1-4 motors)



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Variants

Motor-Variants

V 1.33 Fans, silent version
Fans 230V±10% V-1~
50/60 Hz; 1,100 rpm
Reduced air volume flow
Lower sound power level

V 1.50 EC fans with fixed speeds
Fixed fan speed at optimal operating point

V 1.52 EC fan with controllable speed
Fans adjustable

Protection against corrosion

V 3.12 Stainless steel casing
Special protection from salts (no chlorine) and organic acids in the cold room air

V 6.01 Corrosion protection 1

Tubing:	Copper (NH_3 units = stainless steel)
Fins:	Aluminum, epoxy-resin-coated
End plates:	Aluminum protective coating
Casing:	Aluminum/zinc coated steel, protective coating on both sides

V 6.02 Corrosion protection 2

Tubing:	Stainless steel (V2A)
Fins:	Aluminum, epoxy-resin-coated
End plates:	Stainless steel
Casing:	Aluminum/zinc coated steel, protective coating on both sides

V 6.03 Corrosion protection 3

Tubing:	Stainless steel (V2A)
Fins:	Aluminum
End plates:	Aluminum
Casing:	Aluminum/zinc coated steel, protective coating on on one side

V 6.04 Corrosion protection 4

Tubing:	Copper (NH_3 units = stainless steel)
Fins:	Aluminum, epoxy-resin-coated
End plates:	Aluminum
Casing:	Aluminum/zinc coated steel, protective coating on on one side

Construction-Variants

V 3.09 Double-walled, insulated drip tray
Prevents condensed water from forming on the bottom side of the pan, and it reduces the transfer of defrost heat into the cold rooms.

V 2.05 Water / brine circulation
With a large number of distributors (small pressure drop)

V 2.06 Water / brine circulation
With a small number of distributors (large pressure drop)

CO_2-Variants

V 7.45 CO_2-Direct expansion
up to 45 bar operating pressure

V 7.60 CO_2-Direct expansion
up to 60 bar operating pressure

Electric heater DEHR

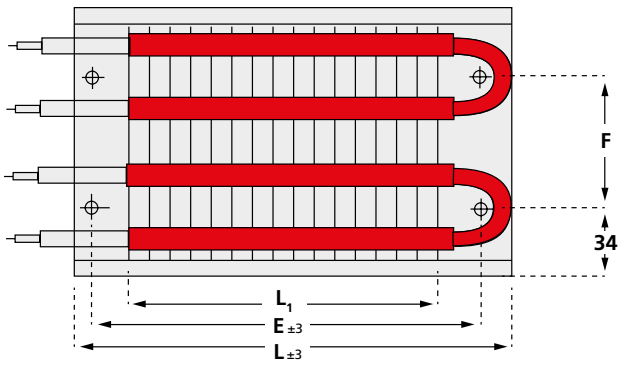
For air coolers with forced-draft fans, for assembly on site.
Suitable for air conditioning, or heating, in the winter.
For optimal heat transfer, the heater rods are fitted in
Cu tube sleeves.

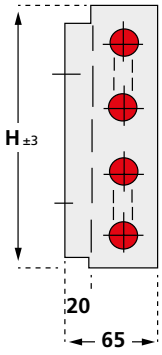
- Fully powder-coated (RAL 9018)
- 230 ± 10% V-1~ or 400 ± 10% V-3~ -Y
- Heater rods with CrNi steel sleeve
- Vapour-tight connections
- Connecting cable 1.0 mm² x 1000 mm
- Casing: steel, continuous hot-dip zinc coated
- Fins: aluminium
- Tube sleeves: Cu



Selection table & dimensions:

		230±10%V-1~		Dimensions					Weight
For type	Description	Current	Capacity	H	L	L_1	E	F	net
		A	kW	mm	mm	mm	mm	mm	kg
071D	HR4-70	4.7	1.1	145	755	700	733	76	1.7
081D	HR4-70	4.7	1.1	145	755	700	733	76	1.7
091D	HR4-70	4.7	1.1	145	755	700	733	76	1.7
072D	HR4-140	9.3	2.1	145	1,433	1,400	1,433	76	3.0
082D	HR4-140	9.3	2.1	145	1,433	1,400	1,433	76	3.0
092D	HR4-140	9.3	2.1	145	1,433	1,400	1,433	76	3.0
083D	HR4-210	14.7	3.4	145	2,133	2,100	2,133	76	4.3
093D	HR4-210	14.7	3.4	145	2,133	2,100	2,133	76	4.3
084D	HR4-280	18.8	4.3	145	2,855	2,800	2,833	76	5.8
094D	HR4-280	18.8	4.3	145	2,855	2,800	2,833	76	5.8





NOTE:

Operate only when the air cooler fans are running, to prevent the cold storage ceiling from overheating. Please observe the corresponding safety guidelines.

www.brand-change.com

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